

# Simona Rolli

Senior Research Associate  
Tufts University, Medford MA 02155  
Fermilab, MS 223 PO BOX 500, Batavia, IL 60510

**Date and Place of Birth** : 21 September 1968, Pavia, Italy

## Education

*Dottorato di Ricerca (Ph.D.)* in Physics, University of Pavia, October 1996;

*Laurea* in Physics, University of Pavia, [Ghislieri College](#) , score: 110/110 *cum laude*, June 1992;

*Diploma* in Piano (score 8.50/10) [Conservatory of Music, Vicenza, Italy.](#)

*Maturita' Classica*, Liceo Classico Statale della Repubblica di San Marino, score: 60/60, June 1987

## Positions Held

- **Senior Research Associate, Tufts University, February 1997-present**
  - Elected Member of the [Fermilab User Executive Committee](#), August 2003-August 2005
  - CDF internal referee (Chair of the Committee) for the following paper:

“Measurement of V+A fraction in Top Decay at  $\sqrt{s} = 1.8$  TeV with CDF”, to be submitted to PRD
  - Physics Analysis activity (2003):
    - "Searches for first generation Leptoquarks at CDF Run II - Combined results"  
[CDF/ANAL/EXOTIC/CDFR/6571](#)
    - "Searches for first generation Leptoquarks at CDF Run II - e nujj"  
[CDF/ANAL/EXOTIC/CDFR/6436](#)
    - "Searches for first generation Leptoquarks at CDF Run II - eejj"  
[CDF/ANAL/EXOTIC/CDFR/6338](#)
    - S. Rolli - [Searches for new particles at CDF II](#) - invited talk at XXXVIIIth RENCONTRES DE MORIOND, Les Arcs, March 15-22 2003
  - Referee of the minireview on Higgs boson production for the 2002 Edition of the RPP ( Particle Data Group)

- Co-convenor of the ["Physics at highest  \$Q^2\$  and  \$p\_{T^2}\$ " Working Group](#), for the [International Workshop on Deep Inelastic Scattering \(DIS2002\)](#) .Krakow, 30th April - 4th May 2000
  - Physics at large  $p(T)^{**2}$  and  $Q^{**2}$ : summary, by G. Moortgat-Pick, S. Rolli, A.F. Zarniecki,, Acta Phys. Polon.B33:3955-3981, 2002 [hep-ph/0210368]
- Co-leader of the CDF [Exotics Physics working group \(January 2001-December 2002\)](#)
  - S. Rolli - [The status of the CDFII experiment](#) invited talk given at 16th Les Rencontres de Physique de la Valle d'Aoste: Results and Perspectives in Particle Physics, La Thuile, Valle d'Aoste, Italy, 9 March 3 - 9 Mar 2001 FERMILAB-CONF-02-154-E (Aug 2002) 11p.
  - S. Rolli -[FNAL: Special Research Seminar](#) Invited talk given at Fermilab, June 12 2001
  - S. Rolli [RUN-II CDF Triggers for SM Higgs Searches](#) Talk given at " The future of Particle Physics" conference, Snowmass, July 2001
- Co-leader of the CDF [Exotic triggers and datasets working group \(April 98- Dec 2000\)](#): this group was formed to establish triggers and selection criteria for Exotics datasets. It worked closely with the other groups to work toward common electron, muon, tau, jet, W, Z, photon, missing  $E_T$  and sum  $E_T$ , and b and c definitions and triggers. It also defined access to the data, dataset sizes and formats, and exotic dataset monitoring.
  - S. Rolli -[Searches for new phenomena at the Tevatron: SUSY and technicolor](#). Invited talk given at 13th Les Rencontres de Physique de la Valle d'Aoste: Results and Perspectives in Particle Physics, La Thuile, Valle d'Aoste, Italy, 28 Feb- 6 Mar 1999, published on the proceeding
- Project leader for L1/L2 hardware [trigger simulation](#) for CDF Run II (June 99 - present): The CDF experiment at Fermilab has a three level trigger system, two of which (L1/L2) are hardware trigger systems. The trigger simulation is the software simulation/emulation packages for L1/L2.
  - S. Rolli et al., [Trigger Simulation at CDF - Published in Proceeding of CHEP 2000, INFN Padova, p250](#)
- CDF internal referee for the following paper:
  - [Observation of Orbitally Excited B Mesons in ppbar Collisions at  \$\sqrt{s} = 1.8\$  TeV - By CDF Collaboration \(T. Affolder et al.\). October 1999](#)
  - [Search for the charged Higgs boson in the decays of top quark pairs in the e tau and muon tau channels at  \$S^{\*\(1/2\)} = 1.8\$ -TeV. By CDF Collaboration \[hep-ex/9912013\] \(Dec 1999\) 21p.](#)
- Member of the [ATLAS](#) collaboration, [CERN \( European Laboratory for Particle Physics\)](#), Geneva, Switzerland: member of the offline software group.
  - Internal referee for the [Aravis-Design document](#) - November 1998

- [S. Rolli et al., Atlas event data model optimization studies based on the use of segmented VArray in Objectivity/DB. - Published in Proceeding of CHEP 2000, INFN Padova, p436](#)
- Member of the [RD55](#) collaboration, [CERN](#), Geneva, Switzerland, working on models for networked analysis of data at regional centres.
- Member of the [RD45](#) collaboration, [CERN](#), Geneva, Switzerland: study of data handling solutions and persistent object managers for large volumes of data using object oriented database systems:
  - S. Rolli et al, [Status Report of the RD45 project, CERN/LHCC 99-28, LCB Status report/RD45](#), September 1999
  - S. Rolli et al, [Status Report of the RD45 project, CERN/LHCC 98-11, LCB Status report/RD45](#), April 1998
- Co-Dean of [Tev University](#) at [Fermilab](#) for the Academic Year 1999-2000, 2000-2001: Tevatron University is an attempt to add the "university back into Fermilab. Since there is not really a physics department here, organized talks at the advanced graduate level and post-doc level are rare. Tevatron University attempts to fill this void.
- Supervision of PhD students and a summer student at Fermilab ( Summer 1999-present)
- **Guest Scientist, Lawrence Berkeley Laboratory, CDF group, January 1996--February 1997 with a fellowship from Collegio Ghislieri, Pavia, Italy:**
  - Member of the [CDF Collaboration](#), Fermi National Accelerator Laboratory, Batavia, IL, USA
  - phenomenology of vector bosons and jet production at CDF:
    - [S. Rolli, PRODUCTION OF WBB PLUS JETS](#), internal Cdf note: CDF/DOC/MONTECARLO/CDFR/3321
  - gluon radiation studies and its implication in the determination of the correct jet energy scale used to measure the top quark mass:
    - [S. Rolli, OSSTTG: HARD GLUON RADIATION IN HERWIG TOP PRODUCTION](#), internal Cdf note: CDF/DOC/MONTECARLO/CDFR/3595
  - Studies on fragmentation phenomena in pQCD:
    - [Charmed mesons fragmentation functions.](#)  
By M. Cacciari, M. Greco, S. Rolli, A. Tanzini. Jul 1996. Phys.Rev.D55:2736-2740,1997
    - [Fragmentation functions approach in pQCD fragmentation phenomena.](#)  
By Simona Rolli. Mar 1996. Talk given at 31st Rencontres de Moriond: Published in \*Les Arcs 1996, QCD and high energy hadronic interactions\* 249-253.
    - [Top mass measurement at CDF.](#)

By Simona Rolli. May 1996.  
Published in \*Padua 1996, Hadron collider physics\* 449-461.

- [Light meson fragmentation functions.](#)

By S. Rolli. 1996.

Published in \*Minneapolis 1996, Particles and fields, vol. 1\* 599-602.

- CDF internal referee for the following papers:

- [Measurement of the top quark mass and t anti-t production cross-section from dilepton events at the collider detector at Fermilab.](#)

By CDF Collaboration (F. Abe et al.). Sep 1997.

Published in Phys.Rev.Lett.80:2779-2784,1998

- [The mu tau and e tau decays of top quark pairs produced in p anti-p collisions at  \$s^{\*}\(1/2\) = 1.8\text{-TeV}\$ .](#)

By CDF Collaboration (F. Abe et al.). Apr 1997.

Published in Phys.Rev.Lett.79:3585-3590,1997

- **Visiting Scientist, Fermilab Theory Division, November 1994-- November 1995:**

- Finalization of the QCD analysis of fragmentation phenomena, which constitutes the main part of her PhD thesis. This original work gives a quite complete description of inclusive meson production in e+e- annihilation, photoproduction and hadron collisions, in very good agreement with the data, and offers a consistent picture of many particles production in QCD.

- [Light mesons production at the tevatron to next-to-leading order.](#)

by Mario Greco, Simona Rolli. Sep 1994.

Published in Phys.Rev.D52:3853-3861,1995

- [Inclusive particle photoproduction to next-to-leading order.](#)

by M. Greco, S. Rolli, A. Vicini. Mar 1994, Z.Phys.C65:277-284,1995

- **Visiting Scientist, NASA/Fermilab Astrophysics Center, January-September1994:**

- studies of phase transitions in the early universe;
- participation in the 1994 Snowmass Summer Study on "particle and nuclear astrophysics and cosmology in the next millenium"
  - S. Rolli et al, [Kinematical probes of neutrino mass.](#)  
Published in Snowmass Summer Study 1994:0195-214 (QB461:D2:1995)
  - S. Rolli "Transizioni di fase nel primo universo" , [Scientifica Acta, I Quaderni del Dottorato](#) , Pavia, Volume IX, N 2, page 77, 1994
- research activity in the framework of perturbative QCD: properties of the fragmentation of quarks and gluons in light and heavy mesons to next-to-leading order accuracy.
  - [Next-to-leading order eta production at hadron colliders.](#)  
By M. Greco, S. Rolli. Apr il 1993, Z.Phys.C60:169-174,1993

- [Next-to-leading order determination of pion fragmentation functions.](#)  
By P. Chiappetta, M. Greco, J.P. Guillet, S. Rolli, M. Werlen. Dec 1992.  
Nucl.Phys.B412:3-38,1994

### **Awards and scholarships**

- Admission and stay at the Collegio Ghislieri, Pavia, adjusted on the basis of merit, 1987-1992: (The Collegio Ghislieri is among the eleven University Colleges recognized by the Italian Ministry of University as being academic centres of excellence).
- Italian Minister of University and Research – Ph.D. scholarship awarded on the basis of a public admission exam, for the Academic Year 1992-1993: qualified in the first 10 recipients among 100 candidates. The fellowship was confirmed for the Academic years 1993-1994; 1994-1995;
- Collegio Ghislieri, Pavia, - post graduates studies fellowship - 1996